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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/799,829 | 03/12/2004 | John Sievers | 199-0222US | 8508 |

29855 7590 05/12/2009

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| EXAMINER | |
|---|---|
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| ART UNIT | PAPER NUMBER |
|---|---|
| 2621 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 05/12/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/799,829 | SIEVERS, JOHN | |
| | Examiner | Art Unit | |
| | David N. Werner | 2621 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *17 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-5 and 7-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 February 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. This Office action for U.S. Patent Application 10/799,829 is responsive to communications filed 17 February 2009, in reply to the Non-Final Rejection of 19 November 2009. Currently, claims 1–5 and 7–20 are pending.

2. In the previous Office action, the drawings were objected to as insufficiently showing the claimed invention. Claims 1–5 and 11–20 were rejected under 35 U.S.C. 101 as non-statutory. Claims 1–5 were rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent 5,260,783 A (Dixit) in view of U.S. Patent Application Publication 2003/0227972 A1 (Fukuda). Claims 11–13 and 16–19 were rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent 6,333,948 B1 (Kurobe et al.) in view of Dixit and Fukuda. Claims 14, 15, and 20 were rejected under 35 U.S.C. 103(a) as obvious over Kurobe et al. in view of Dixit, Fukuda, and ITU-T H.264. Claims 7–10 were rejected under 35 U.S.C. 103(a) as obvious over Dixit in view of Fukuda and Kurobe et al.

### *Drawings*

3. Applicant's drawings filed 17 February 2009 have been fully considered and are acceptable.

### *Specification*

4. Applicant's amendments to the specification have been fully considered and are acceptable.

***Response to Arguments***

5. Applicant's arguments filed with respect to the rejections under 35 U.S.C. 101 have been fully considered but they are not persuasive. First, regarding claim 1, although the claim recites a method for assigning macroblocks to slice groups and indexing the slice groups for intra refreshing, the claim never recites a step of actually refreshing, encoding, or decoding the macroblocks, so claim 1 does not include a step of transforming data. Claim 11, in contrast, recites a step of "encoding the macroblocks". Second, the Office does not consider the video signals or data in claims 1 and 11 to be "underlying subject matter" as required in the transformation test given by *In re Bilski*. A video signal *per se* does not inherently produce a visualization of a physical or tangible object, as applicant states in the arguments, but may also be a visualization of abstract or mathematically-generated data. Accordingly, the method claims fail the transformation test.

6. Applicant's arguments, see pages 4–5, filed 17 February 2009, with respect to the rejection(s) of claim(s) 1 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of ITU-T Recommendation H.264. It is respectfully submitted that H.264, previously cited for claims 14 and 15, incorporates the claimed slice groups of claim 1. In particular, in H.264, macroblocks may be assigned to slice groups in seven "types". Type 2, in particular, is designed to

place noticeable foreground objects such as a face in a distinct rectangular slice group, may be used with the importance level mapping of Fukuda. Then, when the video produced in the combination of Dixit and Fukuda is H.264, all claimed limitations of claim 1 are disclosed.

7. Applicant's arguments filed with respect to claim 11 have been fully considered but they are not persuasive. In the Kurobe et al. reference, a Group of Blocks (GOB) is the H.261 or H.263 equivalent of a slice of H.264, and so is considered to encompass the claimed "slice" of claim 11. Applicant is reminded that an *ipsissimis verbis* test is not required to show anticipation. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

### *Claim Rejections - 35 USC § 101*

8. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 1–5 and 11–20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Supreme Court precedent[1] and recent Federal Circuit decisions[2] indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the

[1] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 US 780, 787-88 (1876).

claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. In the present invention, the method claims do not state what apparatus performs the claimed steps of the claimed encoding methods.

### *Claim Rejections - 35 USC § 103*

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1–5 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,260,783 A (Dixit) in view of US Patent Application Publication 2003/0227972 A1 (Fukuda) and in view of ITU-T Recommendation H.264.

Dixit teaches a digital video encoder. Regarding claim 1, as part of a coding process, Dixit produces composite intra/inter-frame mode coded difference frames comprising both inter-frame coded pixel blocks and intra-frame code pixel blocks (column 7: line 67–column 8: line 3). The division of a frame into P x P pixel blocks is the claimed step of "dividing each frame of a video signal into a plurality of macroblocks". A portion 102 of the pixel blocks, in this example a vertical strip of macroblocks, is chosen to be coded in an intra-frame mode independently of the

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[2] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

remainder of the frame (column 8: lines 1-25). This is the claimed step of assigning Intra-refreshed macroblocks "to a first slice group". The remainder of the difference frame comprises inter-frame coded pixel blocks 104 (column 8: lines 14-15, 22-25). Coding these blocks is the claimed step of "assigning, for each frame, a remainder of the plurality of macroblocks to one or more other slice groups". In Dixit, coded frames are divided into Type I cells and Type II cells for transmission, with Type I cells carrying advanced overhead information (column 11: lines 1-44). Included in a Type I cell is a "vertical strip-location subfield" 418 (column 11: lines 47-50), which identifies the current location of the vertical strip position of intra blocks in a composite intra/inter-frame coded video frame (column 11: lines 64-67). Notice that the intra-coded area is not limited to a vertical strip as in this example, but may take other geometries (column 8: lines 8-14), including "multiple strips" or even "randomly selected blocks". Then, the coding of the location of an intra-area is not necessarily "a vertical strip" or even "a group of contiguous macroblocks extending across the entire picture", as argued by Applicant. In any event, coding this field is the claimed step of "generating a map" locating the macroblocks of the first slice group. In the vertical strip example shown, after one frame is finished coding, the vertical strip 102 is advanced to the right by one column of blocks, so a new group of blocks is intra-coded. If the vertical strip reaches the right side of the frame, the strip is then reset to the left side of the frame (column 8: lines 26-53), to ensure that the whole frame is gradually completely refreshed. Updating the strip position is the claimed "indexing the map" for future Intra macroblocks for the current frame.

The present invention differs from Dixit in that in the present invention, a map is specified as a list of macroblock numbers that specifies to which slice group each macroblock belongs, whereas in Dixit, the vertical strip location subfield is a single field that identifies the location of an intra area as a whole in a frame (column 11: lines 63-66).

Fukuda teaches a video encoder. Regarding claim 1, in Fukuda, blocks are updated according to a map created by qualitative refresh map creation unit 100 based on a subjective importance level (paragraph 0054). Figure 5 shows a refresh period map. Blocks that are deemed to have a high importance are assigned a fast refresh period of 15 frames, and blocks that are deemed to have a low importance are assigned a slow refresh period of 120 frames. Note that each block is given a number, and matched against an importance level (paragraph 0056). Then, an importance level, specifying the refresh period for each numbered block contained therein, corresponds with a claimed "slice group", and the refresh period table 200, updated for each frame (paragraph 0055), is the claimed "macroblock map".

Dixit discloses a majority of the claimed invention except for creating a list of macroblock numbers for a block refreshment schedule. Fukuda teaches that it was known to create a table of block numbers, each of which is assigned a refresh period grouping based on subjective importance. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Dixit to create a schedule of macroblocks according to importance, as taught by Fukuda, since Fukuda states in paragraph 0067 that such a modification would allow for different sets

of blocks to be refreshed at different rates, improving the perceived quality of the moving image.

The only deficiency in Fukuda is that in Fukuda, the groups having differing importance levels are not independently-coded "slice groups" as required in claim 1.

H.264 is a standard video codec. Regarding claim 1, in H.264, a picture is partitioned into a number of slice groups, specified by a slice group map (§ 3.125). Section 8.2.2 describes the various slice group types. In slice group type 2, foreground objects, such as the high-importance areas of Fukuda, are placed in rectangular groups with a mapping of their locations and sizes (§ 8.2.3.3). In slice group type 6, each macroblock is explicitly assigned to a slice group (§ 8.2.2.7). Then, when the macroblock mappings of figure 5 of Fukuda form a slice group map according to H.264, the present invention is achieved.

Dixit, in combination with Fukuda, discloses the claimed invention except for slice groups. H.264 teaches that it was known in the art to partition a frame into slice groups. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to form H.264 slice groups based on the mapping of macroblocks of Fukuda, since H.264 states in §7.4.3, pp. 63–64 that such a modification would prevent error propagation by limiting a transmission error or loss to a slice, rather than the entire picture.

Regarding claim 2, in Dixit, encoded frames are packetized in an ATM structure and transferred over a network (column 10: lines 55-68).

Regarding claims 3-5, figure 1 of Dixit shows several devices connected to a network 12, the devices containing decompressor 20 that includes video decoder 21 and network interface 22, and displaying the decoded video on display device 26 (column 4: lines 15-41).

12. Claims 11–13, 16–19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,333,948 B1 (Kurobe et al.) in view of Dixit and Fukuda. Kurobe et al. teaches a video coding system that performs intra refreshing. Regarding claim 11, in one embodiment of Kurobe et al., as shown in figure 13, a Group of Blocks (GOB) according to the H.261 or H.263 standards may be refreshed in two modes: a whole-group refresh, in which every macroblock in the GOB are simultaneously refreshed (column 29: lines 11-17), and a dispersed refresh mode, in which only some of the macroblocks within a GOB are refreshed for a given picture (column 29: lines 17-31). As shown in figure 1, a single frame may have GOBs refreshed both in a whole-group refresh and a dispersed refresh. Then, determining a GOB refreshed in a whole-group refresh in a frame in which other GOBs are refreshed in a dispersed refresh is the claimed step of "assigning a small subset of the plurality of macroblocks to be Intra refreshed in the first picture to a first slice group", and determining the other GOBs that have dispersed intra refresh, is the claimed step of "assigning a remainder of the plurality of macroblocks to one or more additional slice groups", as an H.261 or H.263 GOB is the equivalent structure to the H.264 slice. Figure 2 shows a flowchart operation of refresh coding the pictures of Kurobe et al. This operation depends on

several parameters, including a FMBLK flag determining whether a current GOP is refreshed with whole-group refresh or dispersed refresh (column 29: line 66–column 30: line 4). In addition, one GOB signaled by MBLKG(I), indicates that this group of blocks should be refreshed, regardless of the current status of the GOP as whole-group refreshed or dispersedly refreshed (column 30: lines 33-57). Determining which group of blocks in a current picture is to be whole-group refreshed is the claimed step of "generating a macroblock map of the first picture". Furthermore, as figure 2 shows, the mode selection part 2705 in a coder determines the refresh coding mode of a picture, the refreshing part 2706 or 2707 intra-refreshes the GOB as appropriate, and coding part 2708 codes the frame (column 30: lines 10-64). This is the claimed step of "encoding the macroblocks of the first picture". As shown in figure 13, the encoded video data is transmitted to a remote decoding apparatus 2709. This is the claimed step of "transmitting the encoded macroblocks of the first picture". Finally, in Kurobe et al., when the next picture is encoded, the value RCOUNT, denoting a count value of the refresh cycle, is incremented (column 29: line 63; column 30: lines 61-64), and as shown in figure 1, causes a new GOB to become the MBLKG(I) GOB, and new macroblocks in disperse refresh GOBs to be refreshed. This corresponds with the steps for the subsequent picture. However, in Kurobe et al., mapping parameters such as RCOUNT and MBLKG(I) that indicate the location of a whole-group refresh GOB are not transmitted with the encoded macroblocks in a picture, and the .

In Dixit, as mentioned previously, the location of an intra-frame subfield is transferred in the header information of a hybrid intra/inter-coded frame (column 11: lines 46-66). This corresponds with the claimed transmission of the macroblock maps.

Kurobe et al. discloses a majority of the claimed invention except for transmitting the location of refreshed intra blocks in an inter frame. Dixit teaches that it was known to transmit a refresh block location subfield in the overhead of a video frame. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to transmit the location of the whole-group refresh GOB of Kurobe et al., as taught by Dixit, since Dixit states in column 7: lines 48-50 that such a modification would reduce error within the group by limiting an error in the refresh to the individual group itself, and not propagating it to the rest of the frame.

The present invention differs from Dixit in that in the present invention, a map is specified as a list of macroblock numbers that specifies to which slice group each macroblock belongs, whereas in Dixit, the vertical strip location subfield is a single field that identifies the location of an intra area as a whole in a frame (column 11: lines 63-66).

Fukuda teaches a video encoder. Regarding claim 11, in Fukuda, blocks are updated according to a map created by qualitative refresh map creation unit 100 based on a subjective importance level (paragraph 0054). Figure 5 shows a refresh period map. Blocks that are deemed to have a high importance are assigned a fast refresh period of 15 frames, and blocks that are deemed to have a low importance are assigned a slow refresh period of 120 frames. Note that each block is given a number, and

matched against an importance level (paragraph 0056). Then, an importance level, specifying the refresh period for each numbered block contained therein, corresponds with the claimed "slice group", and the refresh period table 200, updated for each frame (paragraph 0055), corresponds with the claimed "macroblock map".

Kurobe, in combination with Dixit, discloses the claimed invention except for creating a list of macroblock numbers for a block refreshment schedule. Fukuda et al. teaches that it was known to create a table of block numbers, each of which is assigned a refresh period grouping based on subjective importance. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Dixit to create a schedule of macroblocks according to importance, as taught by Fukuda, since Fukuda states in paragraph 0067 that such a modification would allow for different sets of blocks to be refreshed at different rates, improving the perceived quality of the moving image.

Regarding claim 12, in Kurobe et al. and Dixit et al., the progression of intra-refreshed portions of an image occurs in a regular, cyclic, progressive cycle.

Regarding claim 13, in Dixit et al., as shown in figure 9, in a Type I cell, the strip location field 418 is transmitted before the data field 422.

Regarding claims 16-19, figure 13 of Kurobe et al. shows video decoding apparatus 2709 having decoding part 2710, which decodes the video encoded and transmitted from video coding apparatus 2701 and outputs decoded output picture Imo (column 27: lines 49-56).

13. Claims 14, 15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurobe et al. in view of Dixit and Fukuda as applied to claims 11, 13, and 16 above, and further in view of ITU-T H.264. Claims 14, 15, and 20 specify that the present invention is directed to an H.264 coder and decoder. However, Kurobe et al. is designed for H.261 or H.263 video (column 5: lines 55-59), Dixit is designed for HDTV video (column 9: lines 3-24), which conventionally operates on MPEG-2, and Fukuda is designed for videoconferencing (paragraph 0002), which conventionally operates on H.263. Nevertheless, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt Kurobe et al., Dixit, or Fukuda to operate on H.264 video, since H.264 states in page i that such a modification would increase the compression ratio of encoded video.

14. Claims 7–10 are rejected under 35 U.S.C. 103(a) as obvious over Dixit in view of Fukuda and in view of Kurobe et al. Independent claims 7 and 9 recite apparatuses for encoding and decoding a video, wherein the apparatuses each contain a programmed CPU. Dixit does not specify if an encoding and decoding apparatuses described therein contain a CPU, and Fukuda appears to describe only a specialized hardware circuit implementation (paragraphs 0009, 0051).

Regarding claim 7, in Kurobe et al., a video coding apparatus which produces H.261 or H.263 GOBs, considered equivalent to the claimed slices, is explicitly stated to be implemented on a CPU (column 28: lines 4-26). Regarding claim 8, Dixit shows

video input from a plurality of video sources 14 (column 4: lines 18-19). Regarding claims 9 and 10, figure 34C of Kurobe et al. demonstrates that transmitting video to a PC over the Internet was known at the time of the invention (column 1: lines 16-24).

Dixit, in combination with Fukuda, discloses the claimed invention except for encoding and decoding video with a forced refresh cycle by a CPU. Kurobe et al. teaches that it was known to perform video processing with a central processing unit. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the video encoder and decoder of Dixit (as modified by Fukuda) as software, as taught by Kurobe et al., in order to perform the coding of Dixit on a general purpose computer such as a PC.

## ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner whose telephone number is (571)272-9662. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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/D. N. W./
Examiner, Art Unit 2621

/Dave Czekaj/
Primary Examiner, Art Unit 2621